UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMO

SUBJECT: Fenthion: Bird kills from adult mosquito sprays in Collier Co., Florida

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The US Fish and Wildlife Service recently informed OPP of bird kills caused by fenthion sprays for adult mosquito control on Marco Island, Collier County, Florida. Documentation was submitted. Representatives from SRRD, EFED, and the FWS discussed the incidents in a conference call on August 28 and in a site visit on September 7. The FWS investigator reported that dead and/or sick birds were found on at least 12 occasions between October, 1998, and August, 1999. The incidents occurred after aerial (helicopter) ULV application of Baytex at a rate of 2/3 ounce of Baytex (0.05 lb ai) per acre, which conforms to the label application rate for aerial spraying. The FWS investigator observed dead and sick birds after several sprays, and others were reported by concerned citizens. According to the documentation, sprays were made over the beach early in the morning, and sick and dead birds were observed on the beach within 8-10 hours.

The FWS reports mortality of at least 16 bird species. All are listed migratory species (50 Code of Federal Regulations 10.13 lists those species protected by the Migratory Bird Treaty Act) and one, a piping plover (Charadrius melodus) is a Federally listed endangered species {50 Code of Federal Regulations 17.11(h)} pursuant to the Endangered Species Act. More than 200 dead or sick birds have been found, and it is possible that many more were effected but never found or reported. Other species involved include western sandpiper (*Calidris mauri*), least sandpiper (*C. minutilla*), dunlin (*C. alpina*), sanderling (*C. alba*), short-billed dowitcher (*Limnodromus griseus*), willet (*Catoptrophorus semipalmatus*), snowy plover (*Charadrius alexandrinus*), snowy egret (*Egretta thula*), little blue heron (*E. caerulea*), cattle egret (*Bubulcus ibis*), black skimmer (*Rhynchops niger*), sandwich tern (*Sterna sandvicensis*), fish crow (*Cyanocitta cristata*), ring-

billed gull (*Larus delawarensis*), laughing gull (*L. atricilla*), and others not identified. A sample of dead shorebirds was sent to the National Forensics Laboratory in Ashland, Oregon for analysis, and fenthion was detected on legs, feathers, beaks and/or in stomach contents.

Representatives from EFED, SRRD, and BEAD visited Collier and Lee Counties on September 6 and 7. The situation on Marco Island appears to be somewhat unique. The most effective means of controlling mosquitoes in Florida is to apply larvicides. However, repeated sprays of adulticide, principally fenthion, are made on Marco Island because of the continual influx of mosquitoes from the Everglades (where larvicides cannot be applied). Because of the small area involved on Marco Island, application is made by helicopter. The Collier County Mosquito District stated that they sprayed on Marco Island about 175 days during the past three years. In contrast, Lee County mostly sprays larvicides; fenthion is sprayed only occasionally and only in residential areas.

Marco Island is a haven for shorebirds. Parts of the shoreline include Florida Designated Shorebird Nesting Area Critical Habitat. The shoreline currently is being considered for Federal designation as Critical Habitat for wintering piping plover, which may be present eight months of the year. Clearly, mitigation measures are needed to eliminate exposure of shorebirds to fenthion to ensure their protection under the Endangered Species Act and the Migratory Bird Treaty Act.

Insectivorous passerines also are potentially at risk from exposure to fenthion. Tiebout and Brugger (1995) assessed dietary risks of fenthion, naled, and malathion mosquito sprays to birds in Florida. Based solely on ingestion of fenthion-contaminated food, they concluded that insectivorous birds, including as many as 80 passerine species, could be at risk from fenthion applied for mosquito control. A case study for the black-whiskered vireo (*Vireo altiloquus barbatulus*), a species potentially at risk where mosquitoes are controlled in Florida, indicated that 42% of the population could be at risk from a single fenthion application of 0.1 lb ai per acre. In contrast, they predicted that very few species would be at risk from naled and malathion, two alternative adulticide sprays.

Based on the available information and the current incidents in Collier County, EFED concludes that fenthion spraying, especially when repeated at frequent intervals, may cause mortality in a variety of bird species. Fenthion also is very highly toxic to estuarine invertebrates, which may be at risk from mosquito spraying and may indirectly impact birds by reducing their food supply. EFED also is concerned about possible reproductive risks to birds exposed to repeated applications of fenthion during and immediately preceding the breeding season. Avian reproduction tests (71-4a,b) are needed to determine if chronic exposure from repeat applications poses a reproductive risk to birds on Marco Island.